

[ET-35] The impact of e-learning in the natural history of skills acquisition in regional anesthesia: Computerized Enhanced Visual Learning (CEVL) method for caudal nerve block in pediatric anesthesia.

Seiden S, Sequera-Ramos L, Maizels M, Suresh S, Rychlik K  
Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, USA

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**BACKGROUND:** The use of e-learning has become an important tool in medical education, but its value for resident skills training is yet to be explored. We examined if an e-learning intervention could be useful to supplement training to perform pediatric caudal blocks for rotating residents who typically have minimal pediatric anesthesia experience. Our goals focused on determining if the intervention could increase trainee performance, procedural skills, and confidence so as to decrease number of cases needed to reach skill acquisition. We chose to deploy trainee e-learning using the Computer Enhanced Visual Learning (CEVL) method because it has been shown successful to train in various surgical and endoscopic procedures.

**METHODS:** This study examines anesthesia residents expertise setting up and performing caudal nerve blocks in pediatric patients during 3 month trainee block rotations. The baseline, or control group received traditional teaching techniques during the Winter 2013 block rotation. The intervention group received the CEVL module to enhance their learning experience during the Spring 2013 block rotation. All blocks were performed under direct supervision of teaching pediatric anesthesiology faculty at a single children's hospital, and successive caudal blocks were observed for individual trainees (e.g. trainee #1's first observed caudal, second observed caudal, etc). The study was reviewed and considered exempt from institutional review board approval. The maximum point value which could be achieved in a case was the sum of those for proficiency in setup (22) + skills (22)= 44. Likert scales were used to assess confidence of trainee and supervisor after the block was performed and resident proficiency was assessed by the attending who supervised the case.

**RESULTS:** A total of 41 residents and one (new grad) CRNA participated in the study. There were 198 caudal blocks done with 82 in the control group and 116 in the intervention group. The intervention group showed a significantly increased performance over control. The total points for steps (e.g. setup) and skills (e.g. needle placement) were significantly higher for the intervention group (mean=40.2, SD=3) than the control group (mean=36, SD=6.1) ( $p<0.001$ ).; The intervention group showed a significant difference in total points over control even during the first observed caudal block (intervention group mean=39.5, SD=2.9 and control group mean= 30.3, SD=8.87). Confidence in success of caudal block was higher for the intervention group, (mean=6.6, SD=1) than the control group (mean=4.5, SD=2.3), ( $p<.001$ ) as was attending perception of resident proficiency after the CB for the intervention group (mean=6.7, SD=1) compared to the control group (mean=4.6, SD=3.1) ( $p<.001$ ).

**CONCLUSION:** We found utilizing CEVL e-learning methods reduces the number of cases to skill acquisition and increases confidence to perform caudal block over traditional training techniques alone. CEVL techniques represent a valuable teaching modality to improve resident training. We encourage the use of this type tool set for medical education.

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